

Table of Contents

Preface and Conference Organizers

Chapter 1: Pavement Materials

Study on Test Methods for Intelligence-Based Monitoring of Fresh Cement Concrete Quality Z.Y. Hou, P. Peng, J.D. Xie, S.P. Zheng and Y.Z. Yuan	3
Study on the Influence of Mix Design Parameters on the Properties of Self-Compacting Concrete J.L. Wang, X.Q. Wen, J.H. Shan and Y. Liu	10
Study on Vibrational Liquefaction Behavior of Air-Entrained Concrete Z.Y. Hou, Y.Z. Yuan, Z.G. Yuan, Y.D. Liang and Z.H. Zhou	20
Research on Chloride Ion Diffusion of Concrete Water-Based Capillary Crystalline Waterproofing and its Penetration Depth by Using Electron Microscope X. Xiao, Q.S. Zhang, X.Y. Liang and X.N. Zhang	27
Concrete Strength Estimation Using the Maturity Method X.F. Li, Z. Fu, Z. Luo and S. Li	35
Experimental Study on Gap-Graded Concrete Mixing Uniformity H.P. Gao, B. Tian and Z.Y. Hou	42
Effect of Mineral Additives on Internal Relative Humidity and Dry Shrinkage of Light Weight Aggregate Concrete S.H. Dong, Y. Ge, D.C. Feng, F.P. Wang and B.S. Zhang	51
Study on the Effect of Different Admixtures on the Early Autogenous Shrinkage of High Performance Concrete of Bridge Deck Pavement X.Q. Li, B. Tian, W. Liu and S. Su	56
Experimental Investigation of the Shrinkage Performance of Small Blocks Made by Rock Chips Concrete J. Yuan, D.M. Feng, F.M. Liu, Y.Q. Zhang and Y. Liu	64
Interaction between Slag and Clinker during Cement Hydration Process S.B. Zhou, A.Q. Shen and G.F. Li	70
Experimental Study on Effect of Recycled Asphalt Mixture Particles on Properties of Concrete N. Li, D.S. Zhang, W.W. Han and A.Q. Shen	75
Durability and Applications of Magnesium Phosphate Material for Rapid Repair of Pavements Q.B. Yang	81
Characteristics and Methods Research on Heavy Compaction and Vibration Compaction of Graded Crushed Aggregate H.H. Liu, Z.G. Zhang, N. Liu and D.C. Ma	90
Study on Hair Crack Rubblization of the Old Cement Concrete Pavement C.F. Wu, X.W. Zhang and Z.X. Ma	97
Permeability of Lightweight Aggregate Concrete with Mineral Admixture X.H. Zheng, S.J. Song and Y.Q. Zhang	105
Influence of Air Content and Vibration Time on Frost Resistance of Air Entrained Concrete X.H. Zheng, Y. Ge and J. Yuan	110
A Study of the Capability for Fire Resistance of Polypropylene Fibre Concrete C.P. Chang, S.W. Huang, X.F. Li, B. Tian and Z.Y. Hou	116
Based on the Orthogonal Design to Study the Design and Optimization of Material Composition for Curing Compound C.C. Han, B. Tian, J.L. Song and Z.Y. Hou	124

Chapter 2: Structure and Mechanical Properties of Pavement

Research on Early Cracking of the CRCP in the Tunnel under Low Temperature Difference	133
J.W. Liu, D.J. Zhao, S.W. Liu and J.M. Shen	
The Optimization of ACN-PCN Evaluation Method for Airport Pavement under Operation	141
X.Z. Shao, Y.Q. An, X. Su and J. Yuan	
Sustainability Considerations for PCC Pavement Design and Construction	147
L.L. Chen, D.G. Zollinger and B. Tian	
Study on Dowel Bar Retrofit on Rigid Pavement to Load Transfer Restoration	160
P. Peng, B. Tian, X.X. Mo and K.M. Niu	
Research on Roller Compacted Concrete Graduation with Vibration Liquefaction	166
H.W. Liu, B. Tian, R.G. Hou and S. Li	
Experimental Study on the Performance of Bond-Breaking Layer in Reducing Friction and Improving Anti-Erosion	173
J.L. Yao, X.L. Liu and K.K. Feng	
Development and Challenge of the Overlay Design for Old Cement Concrete Pavement	183
F. Ma, D.J. Wang, B. Jin, F.M. Liu and Y. Liu	
Review of Push-Off Tests for Base Friction of Cement Concrete Pavement	190
F. Yin, S. Li, B. Tian and K.M. Niu	
Influences on the Axle Load Stress of the Cement-Concrete Pavement Structure Caused by the Crack or Cutting Crack of the Semi-Rigid Base	200
B. Yang, H. Tan, J.X. Deng and C. Pang	
Influence of Paving Condition on Longitudinal Cracking of Portland Cement Concrete Pavement	204
L.Z. Han, L.L. Chen and B. Tian	
Study on Freezing-and-Thawing Durability of Cement Concrete Based on Experimental Investigation of Air-Void Parameters	212
J.X. Zhang, X.J. Kong and C. Wang	
Stress Analysis for Cement Concrete around Joint Dowel after Loosing	222
R.G. Hou and K.M. Niu	
Effect of Base Parameters on Mechanical Properties of Cement Concrete Pavement Considering Interlayer Contact	227
Y.C. Zhang, L.L. Gao and S. Li	
Analysis on Mechanical Reasons for Longitudinal Cracking of Cement Concrete Pavement	232
S.L. Ma, S. Yue and Z.Y. Zhao	
Frost-Resisting Property of Bridge Concrete in Alpine Frigid Region	239
Y. Guo, A.Q. Shen, J. Wang and H.J. Zhao	
Research of Built-In Temperature and Zero Stress Temperature of Cement Concrete Pavement at Early Ages	248
C.B. Hu, M.L. Du and L.J. Wang	

Chapter 3: Technologies of Concrete Pavement Production and Control

Equipment Process of Online Testing Fresh Cement Concrete Rheology	259
S.P. Zheng, B. Tian, R.X. Meng, R. Fang and Z.H. Cheng	
Study on Precast Concrete Girders Curing System Based on Automatic Drip Irrigation	266
X.B. Sun, S. Li, B. Tian and J.L. Wang	
The Relationship between Concrete Road Performance and Salt Frost	271
S.B. Zhou and A.Q. Shen	
Statistical Analysis of Early-Age Crack Data from Continuously Reinforced Concrete Pavements in China	277
X. Zhang	
Research on the Construction Technology of Cross-Prestressed Concrete Pavement	283
W.W. Han, D.S. Zhang, N. Li, X.J. Xu and D.S. Jia	
Cement Concrete Pavement Condition and Construction Quality Control in Hengshui City	288
S.S. Yang, J.C. Su, X.Q. Yang and W. Zhang	
A Rapid Method to Determine Joint Opening in JPCP for Sealant Fatigue Test	297
Z.G. Zhang and G.Y. Cheng	